Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Currently Amended) A signal processing system, for interfacing telephony devices with packet-based networks, the system comprising:

a voice exchange for exchanging voice signals between a network line and ~~an asynchronous~~ a packet based network; and

a full duplex data exchange for exchanging data signals from the network line with data signals from the packet based network, wherein the full duplex data exchange demodulates the data signals from the network line, ~~and asynchronously~~ outputs the demodulated data signals to the ~~asynchronous~~ packet based network, ~~and wherein the full duplex data exchange~~ remodulates the demodulated data signals from the packet based network, and outputs the remodulated data signals to the network line[[.]], and

wherein the full duplex data exchange includes a rate synchronizer for receiving data rate codes from the packet based network and setting a data rate of a telephony device coupled to the network line in response to the received data rate codes.

Claim 2 (Canceled).

3. (Currently Amended) The signal processing system of claim 1 wherein the data signals from the network line are modulated by a voiceband carrier, and the data exchange comprises a data pump ~~capable of~~ for demodulating the data signals from the network line for transmission on the packet based network and remodulating the data signals from the packet based network with the voiceband carrier for transmission on the network line.

4. (Currently Amended) The signal processing system of claim 3 wherein the data exchange comprises a jitter buffer ~~capable of~~ for receiving packets of the data signals of varying delay from the packet based network and compensating for the delay variation of the data signal packets.

5. (Original) The signal processing system of claim 4 wherein the jitter buffer outputs an isochronous stream of the received data signals.

6. (Original) The signal processing system of claim 4 wherein the data pump transmits the received data signals to the network line at a transmit rate.

7. (Original) The signal processing system of claim 6 wherein the jitter buffer compensates for the delay variation of the data signal packets by holding a number of the received data signals, and wherein the data exchange further comprises a clock synchronizer which adaptively adjusts the transmit rate of the data pump in response the number of the received data signals in the jitter buffer.

8. (Original) The signal processing system of claim 6 wherein the jitter buffer compensates for the delay variation of the data signal packets by holding a number of the received data signals, and wherein the data exchange further comprises spoof logic which provides spoof data to the data pump when the number of the received data signals held in the jitter buffer is below a threshold.

9. (Currently Amended) The signal processing system of claim 1 wherein the voice exchange comprises a jitter buffer ~~capable of~~ for receiving packets of the voice signals of varying

delay from the packet based network and compensating for the delay variation of the voice signal packets.

10. (Original)   The signal processing system of claim 9 wherein the jitter buffer outputs an isochronous stream of the received voice signals.

11. (Original)   The signal processing system of claim 9 wherein the jitter buffer comprises a voice queue which buffers the received voice signals for a holding time, and a voice synchronizer which adaptively adjusts the holding time of the voice queue.

12. (Currently Amended) The signal processing system of claim 11 further comprising a tone exchange ~~capable of~~ for exchanging DTMF signals between the network line and the packet based network, the DTMF exchange comprising a DTMF queue for buffering packets of the DTMF signals from the packet based network, and a tone generator which generates a DTMF tone responsive to the buffered ~~DMTF~~ DTMF signals, the ~~DMTF~~ DTMF queue outputting a signal to the voice synchronizer to suppress the buffered voice signals when the DTMF signals are in the DTMF queue.

Claims 13 - 25 (Canceled).

26. (Currently Amended) A signal processing system, comprising:

a voice exchange for exchanging voice signals between a first telephony device and ~~an asynchronous~~ a packet based network;

a full duplex data exchange for exchanging data signals from a second telephony device with demodulated data signals from the packet based network, wherein the full duplex data exchange demodulates the data signals from the first telephony device, ~~and asynchronously~~ outputs the demodulated data signals to the ~~asynchronous~~ packet based network, ~~and wherein the full duplex data exchange~~ remodulates the demodulated data signals from the packet based network, and outputs the remodulated data signals to the first telephony device; and

a call discriminator, for discriminating between the voice signals and the data signals by detecting presence of a predetermined tone, ~~which~~ and for selectively ~~enables~~ enabling at least one of the voice exchange and the data exchange.

Claims 27 - 37 (Canceled).

38. (Currently Amended) The signal processing system of claim 26 wherein the voice exchange comprises a voice decoder ~~capable of~~ for decoding packets of the voice signals from the packet based network for transmission to the first telephony device, a voice activity detector which detects the voice signals without speech, and a comfort noise generator which inserts comfort noise in place of the voice signals without speech.

39. (Original) The signal processing system of claim 38 wherein the voice exchange further comprises a comfort noise estimator which generates comfort noise parameters from at least a portion of the voice signals without speech, the comfort noise generator being responsive to the comfort noise parameters.

40. (Currently Amended) The signal processing system of claim 26 wherein the voice exchange comprises a voice decoder ~~capable of~~ for decoding packets of the voice signals from the packet based network for transmission to the first telephony device, a voice activity detector which detects lost voice signals, and a lost packet recovery engine which processes the voice signals to compensate for the lost voice signals.

41. (Currently Amended) The signal processing system of claim 26 wherein the voice exchange comprises a voice encoder ~~capable of~~ _for_ encoding the voice signals from the first telephony device for transmission on the packet based network, and a voice activity detector which suppresses the voice signals without speech.

42. (Original) The signal processing system of claim 41 wherein the voice exchange further comprises a comfort noise estimator which generates comfort noise parameters when the voice activity detector suppresses the voice signals without speech.

43. (Currently Amended) The signal processing system of claim 26 wherein the voice exchange further comprises a decoder ~~capable of~~ _for_ decoding packets of the voice signals from the packet based network, and an echo canceller ~~capable of cancelling~~ _for canceling_ decoded voice signal ~~echos~~ _echoes_ on incoming voice signals from the first telephony device.

44. (Original) The signal processing system of claim 43 wherein the voice exchange further comprises a non-linear processor which mutes the incoming voice signals when the

-8-

incoming voice signals do not comprise speech and the echo canceller detects the decoded voice signals with speech.

45. (Currently Amended) The signal processing system of claim 26 wherein the voice exchange comprises a voice encoder ~~capable of~~ for encoding the voice signals from the first telephony device into voice signal packets for the packet based network.

46. (Currently Amended) The signal processing system of claim 45 further comprising a tone exchange comprising a DTMF detector ~~capable of~~ for detecting a DTMF signal from the first telephony device and generating a DTMF packet for the packet based network in response to the ~~DMTF~~ DTMF signal, the DTMF detector muting the voice signal packets when a DTMF signal is detected.

47. (Currently Amended) The signal processing system of claim 26 further comprising a fax exchange ~~capable of~~ for exchanging fax signals from a third telephony device with demodulated fax signals from the packet based network, wherein the call discriminator selectively enables the fax exchange.

48.   (Currently Amended) The signal processing system of claim 47 wherein the fax signals from the third telephony device are modulated by a voiceband carrier, and the fax exchange comprises a data pump ~~capable of~~ for demodulating the fax signals from the third telephony device for transmission on the packet based network, and remodulating the demodulated fax signals from the packet based network with the voiceband carrier for transmission to the third telephony.

49.   (Currently Amended) A method of processing signals, comprising:

exchanging voice signals between a network line and ~~an asynchronous~~ a packet based network;

demodulating data signals from the network line for ~~asynchronously~~ inputting to the ~~asynchronous~~ packet based network;

remodulating the demodulated data signals from the packet based network for inputting to the network line; ~~and~~

simultaneously exchanging the remodulated data signals from the network line with demodulated data signals from the packet based network;

receiving data rate codes from the packet based network; and

setting a data rate of a telephony device coupled to the network line in response to the received data rate codes.

Claims 50 - 73 (Canceled).

74. (Currently Amended) A method of processing signals, comprising:

exchanging voice signals between a first telephony device and ~~an asynchronous~~ a packet based network;

demodulating data signals from the first telephony device for ~~asynchronous~~ inputting to the ~~asynchronous~~ packet based network;

remodulating the demodulated data signals from the packet based network;

simultaneously exchanging the remodulated data signals from a second telephony device with demodulated data signals from the packet based network; and

discriminating between the voice signals and the data signals, by detecting presence of a predetermined tone, and invoking at least one of the voice exchange and the data exchange based on said discrimination.

Claims 75 - 90 (Canceled).

91. (Currently Amended) The method of claim 74 further comprising:

exchanging fax signals from a third telephony device with demodulated fax signals from the packet based network, wherein the discriminating comprises selectively invoking the fax exchange, and ~~The method of claim 90~~ wherein the fax signals from the third telephony device are modulated by a voiceband carrier, and the fax exchange comprises a data pump ~~capable of~~ for demodulating the fax signals from the third telephony device for transmission on the packet based network, and remodulating the fax signals from the packet based network with the voiceband carrier for transmission to the third telephony device.

Claims 92 - 94 (Canceled).

Claims 95 - 174 (Canceled).